

MSTRUCTO JUVENTLE

HOLINESS TO THE LORD.



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NO. 11.

WATER SPIDER AND ITS DIVING BELL. THE

ERE is a busy scene before us. Several little Spiders are II carrying on their daily avocations like a set of hydraulic engineers and masons, to which some naturalists have compared these curious creatures. In the center of the picture a veritable diving bell is seen, into which a Water Spider is entering. The insect builds the structure below the water and then fills it with vital air.

The charming little dwelling is built of silk. Spiders generally are sericulturists, after their own method. How they manage to make the bell-like structure waterproof, is at present unknown. In this snug dwelling the aquatic Spider passes the winter, and rears its young. When it needs food it rushes out and seizes some passing insect. The bell in which the spider moves is moored to the adjoining grass, or other aquatic plants, by means of cords, much in the same way that a balloon is fastened before it is allowed

to rise into the air. The Spider's balloon is not intended to rise in the water; so it is fastened down by a number of tiny cords.

It is well worth while to study the habits of the Water Spiders. By their entirely aquatic life they have acquired the name of "naiads" or water nymphs (naiadeae), which was given them by Walckenar, who wrote their history. It appears that they have the power to convey air to their dwellings. A layer of atmosphericair, fixed to the hair of their bodies, not only enables them to swim better by lightening their bodies, but by this means they fill those little bells with respirable gas. This is not done at once, but by repeated visits to the surface to obtain a fresh supply.

The annexed engraving is quite a study. One Arachnis (the technical name of the Spider) is entering, another is leaving the bell; some Spiders are descending with fresh supplies of air and food, while others are busy capturing insects to

> support themselves and their offspring.

Entomologists are acquainted with other aquatic engineers, but none of them appear to manifest the same amount of intelligence that the aquatic Spiders, do. This may arise from the imperfect knowledge we have of the history of other water insects. There are water bectles that build silken nests, but they use them only for rearing their progeny. Some aquatic inseets build with more solid materials. They employ mortar and paste, containing sand and tiny pieces of rock,

with which they form a cylindrical shell for their young ones.

No man possesses real strength if he cannot, after having heard all that others have to say, resolve, and resolve firmly, what to do, and carry his resolution into effect. Take counsel of others; profit by their experience and wisdom; but, above all, take counsel with yourself; make up your own mind what to do in this world, and do it.

SECRETS OF SUCCESS.

CCIDENT does very little towards the production of any A great result in life. Though sometimes what is called "a happy hit" may be made by a bold yenture, the common highway of steady industry and application is the only safe road to travel. It is said of the landscape painter, Wilson, that when he had nearly finished a picture in a tame, correct manner, he would step back from it, his pencil fixed at the end of a long stick, and after gazing earnestly on the work, he would suddenly walk up and by a few bold touches give a brilliant finish to the painting. But it will not do for every one who would produce an effect, to throw his brush at the canvas in the hope of producing a picture. The capability of putting in these last vital touches is acquired only by the labor of a life, and the probability is, that the artist who has not earefully trained himself beforehand, in attempting to produce a brilliant effect at a dash, will only produce a blotch.

Seduleus attention and painstaking industry always mark the true worker. The greatest men are not those who "despise the day of small things," but those who improve them the most carefully. Michael Angelo was one day explaining to a visitor at his studio what he had been doing at a statue since his previous visit. "I have retouched this part-polished that-softened this feature-brought out that musele-given some expression to this lip, and more energy to that limb." "But these are trifles," remarked the visitor. "It may be so," replied the sculptor, "but recollect that trifles make perfection, and perfection is no trifle." So it was said of Nieolas Poussin, the painter, that the rule of his conduct was, that "whatever was worth doing at all was worth doing well;" and when asked, late in life, by his friend Vigneul de Marville, by what means he had gained so high a reputation among the painters of Italy, Poussin emphatically answered, "Because I have neglected nothing."

Although there are discoveries which are said to have been made by accident, if carefully inquired into, it will be found that there has really been very little that was accidental about them. For the most part, these so called accidents have only been opportunities, carefully improved by genius. The fall of the apple at Newton's feet has often been quoted in proof of the accidental character of some discoveries. But Newton's whole mind had already been devoted for years to the laborious and patient investigation of the subject of gravitation; and the circumstance of the apple falling before his eyes was suddenly apprehended only as genius could apprehend it, and served to flash upon him the brillaint discovery then opening to his sight. In like manner, the brilliantly-colored soapbubbles blown from a common tobacco pipe-though "trifles light as air" in most eyes-suggested to Dr. Young his beautiful theory of "interferences," and led to his discovery relating to the diffraction of light. Although great men are popularly supposed only to deal with great things, men such as Newton and Young were ready to detect the significance of the most familiar and simple facts; their greatness consisting mainly in their wise interpretation of them.

The difference in men consists, in a great measure, in the intelligence of their observation. The Russian preveib says of the non-observant man, "He goes through the forest and sees no firewood." "The wise man's eyes are in his head," says Solomon, "but the fool walketh in darkness." "Sir," said Johnson, on one occasion, to a fine gentleman just returned from Italy. "some men will learn more in the Hampstead stage than others in the tour of Europe." It is the

mind that sees as well as the eye. Where unthinking gazers observe nothing, men of intelligent vision penetrate into the very fibre of the phenomena presented to them, attentively noting differences, making comparisons, and recognizing their underlying idea. Many before Galileo had seen a suspended weight swing before their eyes with a measured beat; but he was the first to detect the value of the fact. One of the vergers in the cathedral at Pisa, after replenishing with oil a lamp which hung from the roof, left it swinging to and fro; and Galileo, then a youth of only eighteen, noting it attentively, conceived the idea of applying it to the measurement of time. Fifty years of study and labor, however, elapsed, before he completed the invention of his Pendulum—the importance of which, in the measurement of time and in astronomical calculations can scarcely be overrated. In like manner, Galileo, having casually heard that one Lippershey, a Dutch spectacle-maker, had presented to Count Maurace of Nassau an instrument by means of which distant objects appeared nearer to the beholder, addressed himself to the cause of such a phenomenon, which led to the invention of the telescope, and proved the beginning of the modern science of astronomy. Discoveries such as these could never have been made by a negligent observer, or by a mere passive listener.

While Captain (afterwards Sir Samuel) Brown was occupied in studying the construction of bridges, with the view of contriving one of a cheap description to be thrown across the Tweed, near which he lived, he was walking in his garden one dewy morning, when he saw a tiny spider's net suspended across his path. The idea immediately occurred to him, that a bridge of iron ropes or chains might be constructed in like manner, and the result was the invention of his suspension bridge. So James Watt, when consulted about the mode of earrying water by pipes under the Clyde, along the unequal bed of the river, turned his attention one day to the shell of a lobster presented at table; and from that model he invented an iron tube, which, when laid down, was found effectually to answer the purpose. Sir Isambert Brunel took his first lessons in forming the Thames Tunnel from the tiny ship-worm: he saw how the little creature perforated the wood with its well-armed head, first in one direction and then in another, till the archway was complete, and then daubed over the roof and sides with a kind of varnish; and by copying the work exactly on a large scale, Brunel was at length enabled to construct his shield and accomplish his great engineering work.

It is the intelligent eye of the careful observer which gives these apparently trivial phenomena their value. So trifling a matter as the sight of seaweed floating past his ship, enabled Columbus to quell the mutiny which arose amongst his sailors at not discovering land, and to assure then that the eagerly sought New World was not far off. There is nothing so small that it should remain forgotten; and no fact, however trivial, but may prove useful in some way or other if carefully interpreted. Who could have imagined that the famous "chalk cliffs of Albian" had been built up by tiny insects-detected only by the help of the microscope-of the same order of creatures that have gemmed the sea with islands of coral! And who that contemplates such extraordinary results, arising from infinitely minute operations, will venture to question the ["Self Help," by Samuel Smiles. power of little things?

Erron loves to walk arm in arm with truth, to make itself thought respectable.

THE ECHINUS OR SEA URCHIN.

BY BETH.

NOTHING has done more to unfold the secrets of the ocean than the aquarium. And although it is only lately that science has begun to investigate the nature of the previously hidden life which abounds in the depths of the sea, a great deal has been discovered that is very interesting. At first the aquarium was more of a parlor ornament and source of amusement than a studio for the observation of the savant. But its utility as a means of biological research was soon recognized, and large aquaria were erected in London, Paris and other large cities, where the public were admitted on payment of a trifling fee, and repaid by a sight of the marvelous wonders of marine life without the trouble, danger and expense of resorting to the diving bell.

The aquarium represented here is a small affair. A flat piece of slate or zine forms the bottom. Four uprights of metal,

brass or iron, hold four sheets of glass upright, surmounted by a metal form serewed securely to the uprights. To prevent the water leaking out at the angles a water-proof cement is used. The great trouble in using the aquarium was to adjust the vegetation of this little world to the requirements of the animals living therein. For, although creatures live in water, they require oxygen to support life; and the plants require earhonie acid gas to subsist on, just as terrestrial organic beings do. To correctly balance these supplies, to keep the water wholesome, the glasses free

from fungoid life and the whole colony healthy was the difficulty. This, experience, attention and unremitting labor at the outset gradually made attainable, until the conditions of success are so well understood that comparatively little labor is required in conducting the business of large aquariums such as those of London and Paris, alluded to above.

Now there are much larger and far more complete public aquariums at Brighton (England) and in the city of New York. Reservoirs holding thousands of gallons are filled with seawater, in which the most curious marine creatures are exhibited. These are fitted up so as to resemble the bottom of the ocean; rocks are grouped, on which may be seen every variety of seaweeds and plants. Attached to the rocks living creatures may be seen enjoying life just as they would do on the bed of the sea. Such creatures as the Sea Hedge-hog, or Echinus, one of which is represented in the engraving climbing up the side of a small aquarium, such as may be conveniently placed in a parlor for ornamental purposes, or observation of the habits of marine or other aquatic beings. It was, in fact, by such means that the present public taste was created for entertain-

ments of this class on the large scale. Natural history is a subject to which attention is being directed in our schools and colleges. There can be no better method of giving reality and efficiency to such a study than a museum of living objects, which a well arranged aquarium is. A large class of facts can be learned by the examination of aquatic animals, which cannot be acquired without the opportunity the aquarium affords.

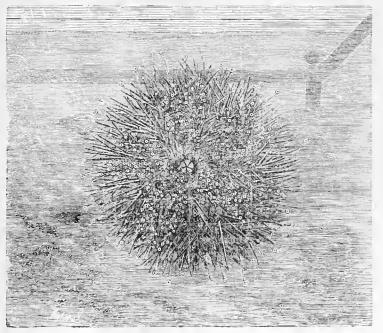
In the picture we see a creature represented crawling up the side of the glass without any apparent reason why it should be able to set at defiance the laws of gravitation. It is probably to eall our attention to this fact that the artist has shown the Echinus in such an unusual position. The animal is covered with spines, sometimes numbering as many as two or three thousand. These are doubtless for defense. An Echinus would be an awkward thing to take hold of by the mouth of any animal, either in the sea or on land. Not only has the Echinus, or Sea Hedge-hog, to be able to protect himself from his natural enemies by defensive armor, but he has to be able to move about to get a living, as we would say.

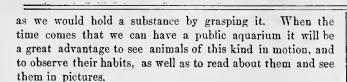
The mouth of this creature ean be seen in the picture. Besides spines he has a large number of tentacles which are each furni-hed with a sucker at the end, by which he can cling to objects. In this way the animal can climb up the glass without any danger of falling, just as a fly can securely walk on a ceiling. It can also attach itself to rocks, and it is said by some naturalists that it can hore a cavity to dwell in, using the spines as

This is by no means a new feature in rock engineering among the lower animals. There are mollusks that have re-

ceived the name of the razor shell, from their cutting their way into sand; others are named lithophagi, or stone eaters, from their proclivities for boring holes in rocks.

There are in our local Museum many specimens of animals belonging to the same family as the Echinus shown in the engraving. They may be seen with the spines and tentacles on and also without them. The body of the creatures were evidently well protected in life from external injury. The first covering consists of plates of hard calcareous matter, securely joined together, some vhat in the same way the different parts of a skull are fastened to each other by sutures. These plates are arranged geometrically, and when they are detached from each other and opened out upon a flat surface they rudely resemble a star. They then show that they are allied to the asterias, or star fish, a singular animal that may be seen on every sea shore, and which, from its form, has received the common name of "five fingers." It is a radiate with five rays. Its mouth is underneath the expanded five fingers, or rays, in the center. The star fish takes in food by this opening, and clings to objects by contracting the "fingers,





Kiograyhy.

JOSEPH SMITH, THE PROPHET.

(Continued.)

O'N the 15th of September, 1840, the governor of Missouri, after a silence of about two years, at last made a demand on Governor Carlin of Illinois, for Joseph, Sidney Rigdon, Lyman Wight, Parley P. Pratt, Caleb Baldwin and Alanson Brown as fugitives from justice. Governor Carlin complied with the demand, and an order was issued for their apprehension; but they were not to be found. They did not feel disposed to be placed again in the power of the blood-thirsty and savage beings in the shape of men, who dwelt in Missouri. So they put themselves in a position where they could not be found.

On the 3rd, 4th and 5th of October, 1840, a general conference of the Church was held at Nauyoo. At that conference Hyrum Smith, Lyman Wight and Almon W. Babbitt were appointed a committee to organize Stakes of Zion between Nauvoo and Kirtland. This was in consequence of several applications having been made for the appointment of such Stakes. Joseph also laid before the conference the necessity of building a House of the Lord at Nauvoo. The conference resolved to build such a House, and Reynolds Cahoon, Elias Higbee and Alpheus Cutler were appointed a committee to build the same, It was also resolved that every tenth day's labor should be appropriated by the people toward the building of the House. The glorious doctrine of laptism for the dead had been revealed by the Lord to Joseph, and he preached a discourse upon it at this conference, which was listened to with considerable interest by the vast multitude assembled. The Spirit of God bore testimony to its truthfulness, and joy filled the hearts of the Saints in reflecting that God had revealed so glorious an ordinance, and that if they complied with it their dead relatives and friends could receive the blessings of the gospel. Elder Robert B. Tompson read to the conference an article, writen by Joseph, on the subject of Priesthood. It was full of precious instructions respecting the subject on which it treated, and gave evidence that he who wrote it had walked with God and had drank deep at the fountain of inspiration.

Joseph exerted himself to obtain a charter from the Legislature of the State of Illinois for the city of Nauvoo. He had a charter drawn up, which was intended, to use his own words "for the salvation of the Church, and on principles so broad that every honest man might dwell secure under its protective influence, without distinction of sect or party." The act incorporating the city was passed by the Legislature, and took effect on the first Monday in February, 1841. On January 15th, 1841, Joseph and his two counselors—Sidney Rigdon and Hyrum Smith—published a proclamation to the Saints scattered abroad, in which full details were given respecting the progress of the work and other matters of interest.

As Joseph's father had passed away, he being the Patriarch in the Church, it was necessary that another should fill that office. Hyrum Smith, his oldest living son, accordingly received the appointment and was ordained to act in that position. This made a vacancy in the First Presidency, of which quorum Hyrum was a member, and William Law was, by revelation, appointed to the place.

On the thirtieth of January, 1841, a special conference of the Church was held at Nauvoo, and Joseph was unanimously elected sole Trustee-in-Trust for the Church of Jesus Christ of Latter-day Saints. On the first of February the first election was held in Nauvoo for members of the City Council, and on the third of the same month the City Council was organize l. John C. Bennett was elected Mayor of the city. Joseph was elected as one of the Councilors. He presented several bills to the Council, among the rest one for an ordinance organizing the Nauvoo Legion, which passed the same day. On the fourth, steps were taken to organize the Legion, and Joseph was elected Lieutenant-General of the Nauvoo Legion. The Legion at its organization, was composed of six companies.

At the next meeting of the City Council we find Joseph introducing a bill, which, after some discussion, passed in relation to Temperance. This prohibited the vending of whisky in a less quantity than a gallon, or other spirituous liquors in a less quantity than a quart, excepting on the recommendation of a physician. He was determined to discountenance barrooms and drinking saloons, and to make the drinking of liquor in places of resort punishable. In the discussion of this bill, he spoke at great length on the use of liquors, and showed that they were unnecessary. They operate as a poison in the stomach, and roots and herbs could be found to effect all necessary purposes. In the business of the City Council, Joseph was particularly active, introducing a great variety of important bills.

(To be Continued.)

A Use For ALL -Utilitarians with propriety claim that they find nothing utterly useless or entirely superfluous within the ever sidening circle of their knowledge of creation. Though show ighted mortals may not promptly discover the fact, there is need assuredly a use for all things. Yast and exhaustless as nature is, she does not waste her power in the production of superfluities. As Martin Tupper states in his volume of Proverbial Philosophy, "There is use in the prisoned air that swelleth the pods of the laburnum: design in the venomed thorns that sentinel the leaves of a nettle; a final cause for the aromatic gum that congealeth the moss around a rose, and a reason for each blade of grass that reareth its slender spire." This is true philosophy, and should teach us submission to the all-wise decrees of Providence. What! Shall we creatures of a day, presume to criticise the great , work of creation, or charge the Creator with folly because we are not able to see the end from the beginning, or to account for many things, which seem to the superficial observer to mar the beauty of nature; or stamp on the universe the brand of imperfection? Animalculæ of which a thousand can disport themselves with as much ease in a drop of water, as a shoal of whales in the ocean, are as truly the creatures of God, as man, who styles himself the lord of Creation. There are wonders of both land and sea that baffle our finite comprehension, but let us never consider anything superfluous and worthless, simply because we do not understand the cause of its existence or the reason for its creation. Rather let us remember that God reigneth and docth all things well.

Questions and Answers

ON THE BOOK OF MORMON.

LESSON CXXXVII.

Q.—Who to.d Moroni to write upon the plates the things which Jared saw?

A .- The Lord.

Q .- What else did He command him to do?

A .- To seal them up.

Q .- Did He give any other command concerning them?

A.—Yes; He commanded that he should seal up the interpretation thereof.

Q -By what means were they to be interpreted?

A .- By means of "interpreters," or the Urim and Thummim.

Q .- When will they be translated?

A.—The Lord said unto Moroni, "they shall not go forth unto the Gentiles till the day that they shall repent of their iniquity, and become clean before the Lord, and in that day that they shall exercise faith in me, saith the Lord, even as the brother of Jared did, that they may become sanctified in me, then will I manifest unto them the things which the brother of Jared saw, even to the unfolding unto them all my revelations, saith Jesus Christ, the Son of God, the Father of the heavens and of the earth, and all things that in them are."

Q.—Did the prophet Joseph have the privilege of translating

this part of the record?

A .- No, he was forbidden to do this.

Q.—What privilege was given him?

A.-To show the plates unto those who should assist to bring forth the work.

Q.-How many of them were there?

A.—Eight.

Q .- Were they the only ones who saw the plates?

A.-No; they were shown unto three others by the power of God.

ON THE BIBLE.

Q.-After the ark of the Lord was brought into the tabernacle, what did David do?

A .- He offered burnt offerings and peace offerings before the Lord.

Q .- What did he do after this?

A .- He blessed the people in the name of the Lord of hosts.

Q .- After he had blessed the people, what did he give them?

A.—"To every one a cake of bread, and a good piece of flesh, and a flagon of wine."

, Q .- When the people had departed, what did David do?

A.—He returned to bless his household.

Q .- Who came to meet him?

A .- Michal, the daughter of Saul.

Q-What did David Cesire to do when he had rest from his enemies?

A .- To build a house unto the Lord.

Q .- To whom did he make this desire known?

A .- Nathan, the prophet.

Q .- What did Nathan say to him?

A.-"Go, do all that is in thine heart; for the Lord is with thee."

O.-What instruction did Nathan receive from the Lord that night?

A.—He was commanded to tell David that he should not build a house unto the Lord, but that his son should do so.

Q .- What further did the Lord promise?

A .- That David's kingdom should be established for ever.

Q .- When was this to take place?

A.-After the days of David were fulfilled, when he slept with his fathers.

FACIS NOT GENERALLY KNOWN.

LEMONS were used by the Romans to keep moths from their garments, and in the time of Pliny were considered an excellent poison. They were natives of Asia.

Cloves come to us from the Indies, and take their name from the Latin "clauvus" or French "ckim," both meaning a nail, to which the clove has a resemblance.

The word biscuit in French is "twice baked," because originally, that was the mode of entirely depriving it of moisture, to insure its keeping.

Before the middle of the seventeenth century, tea was not used in England, and was entirely unknown to the Greeks and Romans

The cantaloupe is a native of America, and is so called from name of a place near Rome where it was first cultivated in Europe.

The onion was almost an object of worship with the Egyptians two thousands years before the Christian era. It first came from India.

It is a curious fact that where the names of all our animals are of Saxon origin, Norman names are given to the flesh they yield.

Apples were originally brought from the East by the Romans. The crab apple is indigenous to Great Britain.

Parsley is said to have come from Egypt, and mythology tells us it was used to adorn the head of Hercules.

Greengage is called after the Gage family, who first took it into England from a monastery in Paris.

The tomato is a native of South America, and takes its name from a Portuguese word.

Nectarine is said to have received its name from nectar, the principal drink of the mythological gods.

Asparagus was originally a wild sea coast plant, and is a native of Great Britain.

Garlic came to us first from Sicily and the shore of the Mediterranean.

Cherries were known in Asia as far back as the seventeenth century.

Vinegar is derived from two French words, vin aigre, "sour wine."

The clove is a native of the Malacca Island, as also is the nutmeg.

The walnut is a native of Persia, the Caucasus and China. Capers originally grew wild in Greece and North Africa. Pears were originally brought from the East by the Romans. Apricots are indigenous to the plains of Armenia.

The gooseberry is indigenous to Great Britain.

The Greeks called butter boutourus-"cow cheese."

The pea is a native of the East and West Indies. The encumber was originally a tropical vegetable.

The na-turtion came originally from Peru. Damsons originally came from Damascus. The bean is said to be a native of Egypt. Sweet marjoram is a native of Portugal. Sage is a native of the south of Europe. The peach originally came from Persia. The turnip came originally from Rome. Quinces originally came from Corinth. Filberts originally came from Greece. Melous were found originally in Asia. Horseradish is a native of England.

Spinach is a Persian plant.





GEORGE Q. CANNON, - - - - - EDITOR.

SALT LAKE CITY, JUNE 1, 1878.

EDITORIAL THOUGHTS.

HILDREN, we are living in the midst of important events. The prophets looked forward to our day and foretold the wouderful changes and revolutions that should occur. It is called the dispensation of the fullness of times, and it is truly marvelous to witness the hand of the Lord among the nations and see the wonderful discoveries which are made in

seience and arts, and the remarkable progress that men have made, especially since the revelation of the gospel to the prophet Joseph. How marvelous it is that by means of the telegraph wire we can communicate with our friends in the remotest parts of the earth almost instantly. And how wonderful that by means of steam we can travel over vast distances almost with the speed of the wind. One can get into the

cars at Salt Lake City and in five days be in New York, and in eight days more be in Liverpool. When the Saints left Nauvoo it required weeks for the Elders to reach New York from that point; but now how great a change!

We heard a machine the other day, called the phonograph, repeat, by the turn of a crank, a speech that had been made. It also sang a song, and did so in the voice of the person who had sung it previously in the room. The machine kept perfect tune, and talked and laughed, reproducing the exact sounds that had been made before. This is a wonderful invention; but there are doubtless many more to be made equally strange. For these are the last days, and the Lord is fulfilling His marvelous purposes. He has said that he will cut short His work in righteousness, and by means of these inventions and discoveries it can be done; for one man, by their aid, can do much more in these days than a man could do in old times. He has the printing press and steam and telegraph wires and all such facilities to assist him.

Latter-day Saints have been taught from the first organization of the Church that they had a great work to perform. The Lord has said that Zion, meaning this work, shall be the head. It seems like a long time in being fulfilled, but it will nevertheless come to pass. Though it seems a long time to us, it is a short time with the Lord. Every day that passes is adding strength and influence to the Lord's people, and the way is being prepared for them to fulfill their destiny. You, children who read this, will see a wonderful change in the circumstances of the Latter-day Saints by the time you reach manhood and womanhood. The little one will have become a strong nation. Our nation is in a pitiable condition in many respects. The people are numerous. They are wealthy. They have made great progress in science and art. The land is full of inventions of the most wonderful character. Learning has progressed to a wonderful extent, but yet the people are not strong for the reason that they are not united. We heard a man say a few days ago, and he is a man of great

experience and well knows the condition of affairs in the nation, that the rulers of the nation were treading upon a hidden volcano. His remarks were assented to by several other men of experience and knowledge. There is a feeling of this kind in the minds of a great many men of experience. They are looking forward with fear and trembling to the future. It is said, and probably with truth, that in many large cities of the Union laboring men are secretly meeting and drilling so as to be ready whenever opportunity offers to take part in destroying the existing order of affairs.

In Mexico for a great many years there have been constant revolutions. No sooner has one president taken possession of the chair of state than somebody has conspired against him and risen up to overthrow him, and searcely any one has been permitted to serve out his time in peace. Just now we are threatened with a similar condition of affairs in the United States. It is boldly asserted that president Hayes is not the legal President of the United States, that he was not elected by the people, and that Mr. Tilden was. It is said that he oocupies his place by reason of fraud, and steps are being taken to have this examined. These are some of the evils which the prophet Joseph and the prophet Brigham, and others who have been inspired, have predicted. They have foretold these things, and have said that disunion and strife would prevail until the nation would be overthrown. The day is not far distant when good, peaceful, permanent and thorough government will only be found where the Latterday Saints live.

The whole land is full of debt. There is searcely a city outside of Utah Territory in the United States that is not earrying a heavy load of debt. The taxes resting upon the people are enormous. This is one cause of the hard times. It produces dissatisfacton everywhere. In New York city the debt exceeds one hundred and fifty million dollars, and other eities are in debt in the same proportion. It is this condition of affairs which is crushing the life out of all business, and causing widespread bankruptey and ruin. In Utah Territory we have but very little or no debt. Our Territory, our counties, our cities are almost entirely free. If there be any debt it is only small amounts. This makes our taxes light, and is one of the best evidences of good government to be found. If we continue to do as we have done in this respect, and have good schools for our children so that all can be educated, and keep our people employed, and teach them the principles of the gospel, we shall continue to grow in strength and be the most happy and most favored people upon the face of the continent. In this way the promise of the Lord will be fulfilled; for many years ago the Lord promised unto us that this should be our condition and that we should have peace when the rest of the world should be at war and be plunged in civil dissensions and strifes.

Remember, however, children, that these blessings depend upon our faithfulness. If we do not keep the commandments of the Lord His promises cannot be fulfilled. He makes these promises on the condition that we shall be faithful in listening to His voice and obeying the counsel that he gives to us through His servants.

THE history of the world teaches this: that the only safe guide of a great intellect is a pure heart; that evil no sooner takes possession of the heart then folly commences the conquest of the mind.

Be pure, but not stern; have moral excellences, but don't bristle with them.

A JAPANESE ARCHER.

A RCHERY has been practiced in former ages in almost every country. Since the invention of modern fire-arms, however, bows and arrows are not considered such formidable weapons as they used to be. In fact, as weapons they are fast becoming obsolete, and are generally regarded now as relies of barbarous ages, almost harmless in effect when compared with the hundreds of different kinds of destructive weapons employed in modern warfare. Even the native races

of this continent, who a few years since knew no better weapon than the bow and arrow, now almost look with scorn upon such rude things, as they revel in the use of the more effective rifle. Modern ingenuity has been taxed to the utmost to devise the most destructive weapons for the killing of human beings, and to read of the wonderful and monstrous inventions in this line, one is almost forced to think that perfection is nearly reached.

The first direct mention we find of the bow is in Gen. xxvii, where Isaac said to Esau, "Now therefore, I pray thee take thy weapons, thy quiver and thy bow, and go out into the field, and take me some venison." There is no doubt, however, that it was used long previous to that time. Representations

of the bow are found upon the sculptures of Nineveh. The bow came to be the national weapon in Britain after the accession of the Norman kings. Such excellence in its use was attained to that it became the terror of the enemies of England. It continued in use and was the principal arm of the infantry until nearly the end of the 16th century, when it gradually gave way to the introduction of fire-arms. The wood of the Spanish or English yew was preferred for the bow, but when that could not be obtained ash was some

times used. The proper length for the bow was the hight of the archer, and that of the arrow half the length of the bow. The bowstrings were made of plaited silk. The power of flight, correctness of aim, and penetration of these terrible missiles were prodigious. In shooting matches, 300 yards was the common range, and the ordinary mark was a straight willow or hazel rod, as thick as a man's thumb, and five feet in length; and such a mark as this a really good archer held it a shame to miss. When shooting together, as it was called, or, as we should say, in volleys, they occasionally discharged their

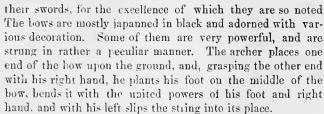
arrows at a much longer range, particularly when shooting from upper ground, or at an elevation, and with fatal effect. At 200 yards, no armor but the best Spanish or Milan steel-plate could resist the English arrow; and the legends of men and horses shot through and through, are proved by corslets of the stoutest plate, preserved in collections where the shafts have been driven through the breast plate and the whole body of the wearer, and then through the steel backplate, not inferior in strength to the breast."

It is said that "but one people has ever been discovered so barbarously ignorant as not to have attained sufficient inventive genius to devise, or skill to use, the bow and arrow;" those are the natives of Anstralia.

Many astonishing feats of archery might be related of the natives of this continent. It is said that among certain tribes it was formerly no uncommon occurrence for them to shoot an arrow entirely through the body of a bison, or a buffalo, as it is usually called.

The bow is still used to some extent, and until very recently was a favorite weapon, among the Japanese, one of whom, with his weapon, is illustrated in the engraving. The Japanese spend nearly as much labor upon their bows as they do upon





People are not satisfied in this fast age to kill their enemies off by any such slow process as the use of the bow and arrow would imply. The use of gunpowder has given rise to the inventiou of a numerous class of weapons, in the shape of cannons, guns and pistols, all of which are used with terrible effect. Ponderous guns have been invented capable of throwing shot of several thousand pounds weight a very great distance. Then there are mortars and cannons which throw bomb-shells, grape, cannister, chain and other kinds of shot, spreading wholesale carnage when they strike the enemy. Add to these the deadly repeating rifles, and then the treachous torpedoes that have the power of blowing ships and their crews to atoms, and we can form some conception of the improvent of weapons and the horrible effect of the modern engines of war. Compared with these, the bows and arrows anciently used are among the most insignificant of weapons.

IMPROVEMENT IN AGRICULTURE.

BY L. C. G.

IN no other of the primary pursuits of man has modern I ingenuity wrought such mighty improvements as in that of Agriculture. If we require any evidence to convince us of this fact, we have only to refer to the rude in plements that the tillers of the soil used a few generations since, and compare them with the wonderful labor-saving devices made use of by the farmer of the present day. The plows of the ancients were the rudest things imaginable, being generally the natural crook of a tree, sometimes shod or pointed with iron or brass. The earliest plow was the archetype or pattern of an Egyptian character commonly used in hieroglyphic writing, and which subsequently gave birth the alphabetical sign of Alpha—the first letter in our alphabet—A. Many of our readers are probably not aware of this fact, that the form of the letter A, the first letter of ours and the Egyptian alphabet was suggested by the shape of the ancient plow. We read that there were two methods of using this ancient Greek plow. The most ancient style was that of having the vertex or top of the alpha-shaped instrument capped with brass or iron, which part was forced into the ground by the plowman with his foot, and then held in that position -ywhile it was drawn by hand power. The other method was that of having the shorter limb of the alpha tipped with metal and forced into the ground, in which position it was drawn by oxen or bullocks. The ancient hand plow was considered by the Greeks a sacred symbol, an emblem of power and dignity, "a sceptre fit for kings and even gods to wear." Diodorus tells us that the priests and kings of Egypt bore a scentre in the form of a plow.

The ancient Jewish plow was also a very rude affair. It was probably not unlike the plow used in Palestine at the present time, which is capable only of making a moderate scratch in the ground. It is described as having an iron plowshare "somewhat broad, but not large, fixed to the end

of a shaft that lies flat. Two handles, and sometimes only one, standing upright from this shaft, prepare it to be guided by the plowman's hand; while a pole of sufficient length, rudely fastened to the same bottom, near the handles, and slanting upwards to the proper hight, answers the purpose of a beam, to which is fixed the common yoke for drawing." The share has a good deal of likeness to the short sword that was anciently used, and might easily be beaten into such an instrument, according to the scriptural injunction.

The ancient Anglo-Saxon plow is said to have only had one handle. The ancient Norman plow also had but one handle, and the plowman usually carried in one hand a staff, or an ax, with which to break the clods. The farming utensils of the ancient Scots were almost entirely composed of wood. They had wooden spades with which to dig the ground and wooden plows with which to plow it. The harrow was composed of wood, and even the harness for their horses, that is, all they had, which was not much. The horses drew the plow hy their tails. They were worked generally four abreast. "The plow:nan walked backwards before the plow at the head of the horses, which were divided into pairs. He held the two innernae by the heads, to keep the couples asunder, and observed through the space between the horses the way of the plowshare; otherwise it would have been spoiled by rocks if not perceived by this means."

The ancient Welch used wooden plows, which were drawn by four oxen. The driver walked in front of the animals backwards, much in the same style as the Seots.

The ancient mode of harvesting even differs more widely from that practiced by us at the present day than does their plowing. The grain in most of those ancient nations was either pulled up by the roots or cut with a rude sickle or hook, The threshing was usually done by beating the grain with sticks, treading it out by driving animals over it or setting fire to the straw, as the Scots did, and burning the busks off. The winnowing, or cleaning, of the grain was generally done by tossing it in the air when the wind was blowing.

Think of the old method of scratching the ground up with a crooked stick and covering the seed by dragging a log of wood or a clump of brush over it. Then compare this with the improved gang plows now in use, or, better still, with those wonderful automatic machines which possess the combined powers of the plow, grain-sower and harrow.

Call to mind the old style of harvesting, where men and women plied the rude sickle or pulled up the grain by the roots, keeping time by the motion of their bodies to a wild kind of a chant, and tramped the beards and hulls off the barley with their naked feet to the same kind of music. Then compare these rude methods with the labor saving machines which at the same time cut and thresh the grain, and even grind it into flour. When we do this, it is not difficult to see the "march of intellect," at least in this direction.

But these improved and labor-saving methods have not yet become universal, even in civilized countries. We have only to go a short distance south-east of our Territory, into Mexico, to find a people still using the old-fashioned wooden plow, drawn by oxen having for a yoke a straight stick placed across their foreheads and tied to their horns. In fact, they are not much improved in this respect, according to the statements of modern travelers, in the very birthplace of civilization—the far east.

 $\rm Mankind$ worship success, but think too little of the means by which it is attain d.



OUR SULPHATES.

BY J. L. BARFOOT.

SULPHURIC acid was first obtained by the distillation of sulphate of iron, or green vitriol, and was termed, from its appearance and consistency, oil of vitriol. This acid is now prepared by burning sulpur or iron pyrites under a regulated current of air in a furnace, by which sulphurous acid is obtained, which is subsequently converted into sulphuric acid. To effect this change, although it is dependent upon very simple chemical principles by which the elementary bodies act upon each other naturally, artificial contrivances have to be resorted to which necessitate a very large outlay. An expensive

is necessary, consisting of large leaden chambers, flues, furnaces, boilers, eisterns, and platinum retorts for concentrating the acid, to bring it up to the requisite strength. All these changes are, however, produced in our mountains by the ordinary natural processes. Sulphur is burnt, pyrites are decomposed and sulphuric acid made, or unmade, if necessary, according to the nature of the materials gathered up into the great laboratory where Nature is the great alchemist.

Thus we have thousands of tons of sulphuric acid ready to hand: not in carboys, it is true, but it is there, in every canyon amd mountain pass, held safely in a more or less solid state, in union with other elements of use to man.

It is also true that, to bring about these changes in matter, the same amount of energy has to be expended in the laboratory of the mountains that is expended in that of the chemist. It costs as much in labor, there is as much work to be done, and even the methods by which it is accomplished are almost the same; but nature pays the cost of production.

Thus it happens that we have around us sulphates, among a host of other ready-made salts. We do not find the sulphuric acid running about to corrode and destroy organic life, which it would do in its free state if sufficiently concentrated; but we find it in a condition in which it has expended its energies upon inorganic matter.

If we take a little carbonate of lime and pour sulphuric acid on it until all efferves cence ceases, we have artificially produced sulphate of time, or gypsum. If we pour sulphuric acid on carbonate of soda, until both the acid and alkali have exhausted their antagonistic forces upon each other, we shall have sulphate of soda, or Glauber's salt. Caustic sulphuric acid and caustic lime, when wedded together in chemical bands, have their corroding properties cencealed; we speak of the salt thus formed as neutral, because its activity is dormant or latent. This is equally true of caustic sulphuric acid and caustic soda, or of any other acid and alkali which have chemically combined to produce a neutral salt.

Of some of the sulphates thus produced by the ordinary natural operations in our mountains it is pleasing to reflect that advantage is being taken by some of our manufacturers. Thus we need not import "plaster of Paris," an article of value for cements and ornamental purposes, while the raw material is of great worth for fertilizing our fields. The time may come when it will be used for sanitary purposes, to make our cities free from offensive and life-destroying odors which arise from decomposing masses of organic matter.

We can see the value of gypsum by reason of the sulphuric acid it contains by an inspection of its components. In one hundred pounds of gypsum there are forty-six and one half pounds of sulphuric acid, nearly fifty per cent; the lime ratio is thirty-two and one half pounds; not quite one third of the

mass; the water nearly twenty-one pounds, rather more than one filth in proportion. Now all these constituents are valuable on the soil, for they are all constituents of vegetation. This, broadly stated, gives, in one ton of gypsum, 930 pounds of sulphuric acid, 652 pounds of lime and 418 pounds of water. Sulphate of lime is known from carbonate of lime by its not efferveseing with acids. When burned it has not the property of making mortar; but when roasted at a proper temperature and pulverized it forms a cement—the well-known "plaster of Paris."

There are many sulphates besides those named above, which will be described as alum rocks.

INCIDENTS OF A MISSION.

BY ELDER C.

(Continued.)

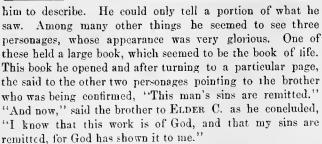
In the month of June, and soon after his first visit to Salem, ELDER C. first visited Lawrence. He found there a man and his wife who belonged to the Church; but they had not seen an Elder for many years, and their joy at seeing him was unbounded. They had a number of children, some grown and married, who were ignorant of the gospel. ELDER C. spent some days with them; and during his stay held a meeting in the house of the brother, whose name was R—. The family, including those that were married, constituted the audience, which numbered about a dozen persons. He opened meeting by singing and prayer, just the same as if hundreds had been present, and then preached a discourse which seemed to please the listeners.

Next day he went to Lowell; but paid occasional visits to Lawrence during the summer, while making the rounds of the circuit which he succeeded in opening up in that region.

At length, after he had paid Brother R—— several visits, each time bolding a little meeting with the family, and during his absence in another part of his field, a Scotchman, a son-in-law to Sister R——, who had attended the meetings, came to her and said: "Eldin C, preaches more like the scriptures than any other preacher in the heard, and he says if we will repent and be baptized the Lord will reveal to us whether the doctrine is true or not. Now, I mean to repent and be baptized the next time he comes here; but let me tell you now, that if the Lord don't reveal to me that the doctrine's true, I'll have no more to do with it, for I don't want to be deceived."

He was simple minded and illiterate, but honest in his determination to test the promises made by Elder C., as well as the scriptures, and was sincere in his conversion to the gospel; but with a shrewdness often seen in the Scotch, he didn't "want to be deceived." Sister R—— bore her testimony to him that the work was true, and told him he would receive a similar testimony if he embraced it with an honest heart. So when Elder C. paid his next visit to Lawrence, the man, together with his wife, were baptized, and duly confirmed on the Sunday after baptism, in the presence of the family and several members of the Church from an adjoining town.

About a week after his confirmation, he bore to ELDER C. the following testimony. While the Elder's hands were on his head, during the ordinance of confirmation, his mind seemed to be caught away from his surroundings and he beheld a glorious vision, one which it would be impossible for



ELDER C. continued to visit Lawrence periodically, and at length, on the 22nd day of August, he baptized five persons there, all members of the R—— family, and on the same evening confirmed them, blessed three little children, ordained one of the brethren to the office of an Elder and organized a branch of the Church. The meeting at which this was done was held where the others had been, in an upstairs room, in the tenement house occupied by Brother R——. A crowd of Irish ronghs assembled under the window, threw pebbles against it, beat tin pans, and created a great noise. The blinds had to be closed, so as to conceal the light in the room, and cause the mob to think the family had retired. When all was still the meeting proceeded.

ELDER C. retired that night thinking he had done a good day's work. It was the twenty-first anniversary of his birth, and he was very grateful to the Lord for permitting him to celebrate it in so glorious a manner.

In the following November the entire branch emigrated to Utah, and there was something very singular about ELDER C's, labors in that place. He had often visited the place, had held many private meetings, had tried for an opening to preach in public but without success, and had never succeeded in making any a quaintances outside of the R—— family. He had baptized nine persons in the place, and every person in that city who heard his testimony was gathered out. It seemed as though the Lord wanted him to go to that one family, but not to any other person.

(To be Continued.)

THE GOSPEL PRIN-CIPLES.

BY DANIEL TYLER.

(Continued.)

A NUMBER of the foregoing chapters have been devoted to the different grades of priesthood. I will now say something about the duties of members of the Church of Jesus Christ of Latter-day Saints.

Several of these duties are mentioned in what has been already said on the duties of the Lesser Priest-hood—such as partaking of the sacrament, praying vocally and in secret, meeting together, etc. It is also implied that they must not hold any hard feelings one towards another, that they must not speak evil one of another, and that they must not tell lies or backbite one another. As we have already shown, it is the duty of teachers to see that none of these evils exist. Of course, then, it is the duty of members not to indulge in what the teachers must suppress when found among the Saints. The importance of being worthy to partake of the sacrament must be apparent to all who understand the gospel. Jesus said, "Except ye eat of my flesh and drink of my blood you have no life in you." This does not mean, as the Catholies hold, that the bread is transformed

into the very body of Christ and the cup into His blood; but as He said in another place, "As oft as ye do this, do it in remembrance of me." And as St. Paul said, "For as often as ye eat this bread, and drink this cup, ye do show the Lord's death till he come." The substance of all that is revealed on this subject is that it brings to mind not only what sufferings Jesus endured for us and all mankind, but the consummation of the great plan of redemption laid "from before the foundation of the world," "the only name under heaven whereby man can be saved" and the Godlike love and union which should dwell with all Saints. Without this redemption Adam and Eve and all their posterity would have been eternally lost. No one from the beginning to the end of the world could have been resurrected to return to God, from Whom all our spirits came. Take away the atonement made by our great Redeemer and all our hopes of heaven, happiness and exhaltation would be lost-eternally and hopelessly lost. But through Him all may come to God and be saved.

The Saints should make the labors of the teachers easy by observing every known duty. Otherwise, the only benefit resulting from their labors will be that they have cleared their own skirts.

Through the faithfulness and obedience of the Saints, the teachers or presiding officers will not have any occasion to govern them. Joseph Smith once said to a stranger who enquired how he governed so great a people of so many nationalities and conflicting traditions, "I do not govern them. I teach them correct principles, and they govern themselves." This is all that should be expected of teachers, or any other grade of priesthood.

One duty of vital importance is the building of temples, in which to perform ordinances for the living and the dead. Could those who feel indifferent to this duty once have the vision of their minds opened to the anxiety of those prisoners of hope on the other side of the vail, and be as anxious for the dead as many of the dead are for themselves through the living, the temples now in progress would soon be completed and filled and others going up. There are many little everyday duties to attend to. Our daily labors—feeding the hungry, if any be in our midst, clothing the destitute, visiting the sick, binding up the broken hearted, comforting those who mourn, encouraging the meek, uniting in our temporal as well as spiritual labors, being self-sustaining and independent of Babylon, and finally, keeping all the commandments of God.

(To be Continued.)

FORMATION OF CHARACTER.—Have you ever watched the icicle as it is formed! Have you noticed how it froze, one drop at a time, until it was a foot long, or more? If the water was clean, the icicle remained clear, and sparkled brightly in the sun; but, if the water was slightly muddy, the icicle looked foul, and its beauty was spoiled. Just so our characters are formed. One little thought or feeling at a time adds its influence. If each thought be pure and right, the character will be lovely, and sparkle with beauty, but, if impure and wrong, there will be deformity and wretchedness.

VIRTUE—Virtue, without talent, is a coat of mail without a sword; it may, indeed, defend the wearer, but will not enable him to protect his friend.

Chapter fon the Little Ones.

LEARN A TRADE.

Some boys are ver-y anx-ious to learn a trade. All boys should be. There are some boys, though, who would rath-er not. They would have to work to learn a trade; and they think they would rath-er live with-out work. Per-haps they think their fath-ers are a-ble to sup-port them with-out their as-sis-tance. Or that it would not look well for them to work at black-smith-ing, build-ing, shoe-mak-ing, or any-thing of the kind, when they can live with-out it. They fan-cy it is not so re-spect-able to work at a trade as to spend their time in idle-ness. They see some peo-ple who al-ways dress well, and yet nev-er seem to work. They ad-mire them. They think their life must be a pleas-ant one. They notice that tradesmen sel-dom dress so fine-ly; and oft-en work very hard. That, they think they would not like. Boys who feel like this are ver-y fool-ish.

The most worth-less men liv-ing are those who do not work for their liv-ing. Man-y of those who wear sty-lish clothes are gam-blers, who live by cheat-ing others. Some are thieves, who steal from hon-est men for a liv-ing. Those who spend their time in idle-ness and let their fath-ers sup-port them, are quite as useless. They are like drones in the bee-hive. They eat, but do not work. The world would be bet-ter off with-out all such.

But trades-men are use-ful. They are work-ers. They add to our hap-pi-ness. We could not do well with-out them. If there were no shoe-mak-ers, we would

have no shoes to wear. If there were no car-pen-ters, nor ma-sons, nor plas-ter-ers, we could have no nice houses. All these are nec-es-sa-ry. It is hon-or-able to work at any use-ful trade. Man-y of the great-est and best men who ev-er lived have been trades-men. Ev-er-y boy should learn a trade, no mat-ter how rich his fath-er may be. If he should nev-er have to work at it for a liv-ing, it will nev-er hurt him, nor dis-grace him, to be a-ble to. We hope ev-er-y one of our lit-tle read-ers will try to learn some use-ful trade.

SUNDAY LESSONS. FOR LITTLE LEARNERS.

HISTORY OF JOSEPH SMITH, THE PROPHET,-LESSON LXXV.

Q-How did Joseph and the brethren that were with him in jail spend the evening of the 26th of June?

A.-Hyrum Smith read extracts from the Book of Mormon and Joseph bore testimony of their truth to the guards.

Q-During the night, what question did Joseph ask of Dan Jones?

A. -If he was afruid to die

Q.-What answer did Dan Jones give him?

A.—He said as he was engaged in such a cause he did not think that death would have many terrors.

Q .- What promise did Joseph make to him?

A —That he would see Wales, and fulfill the mission appointed him before he should die.

Q .- After spending a restless night, what did Joseph do?

A.—He sent Elder Dan Jones to Governor Ford to tell him of the murderous threats of the soldiers.

Q.-What did Governor Ford say in reply?

A.—"You are unnecessarily alarmed for the fate of your friends, sir; the people are not that cruel."

Q .- After Brother Dan Jones returned to the jail, what did Joseph do?

A.—He wrote an encouraging letter to his wife, and sent it by Brother Wheelock.

Q - Was anything else sent by him?

A.-Yes; all the prisoners sent messages by him to their families.

Q — What was he instructed to do when he reached Nauvoo?

A.—To gather up and forward witnesses for the trial of Joseph and others, to come off in two days.

Q .- What next did he do to prepare for his trial?

A.—He wrote a letter to O. H. Browning, a lawyer, at Quincy; and sent it by A. W. Babbitt.

Q.—When A. W. Babbitt got outside the jail, who did he hand the letter to?

A.—To Brother Dan Jones, to take it to Quincy immediately.
Q.—What did the mob do when they saw him going away with

A.—They tried to take it from him by force, and then waylay him.



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